REMARKS/ARGUMENTS

Applicants thank Examiners Verderame and Angebranndt for the courtesy of an interview extended to Applicants' representative on October 16, 2008. Applicants' claims were discussed during the interview. More specifically, the difference between aminium salts and diimonium salts were discussed with respect to *Sherr* (US 3,770,793). Additionally, non-obviousness of the claimed diimonium salt dye was discussed with respect to a potential showing that fluorinated alkylsulfonyl counterions have unexpected benefits as compared to the organic fluorinated counter-ions (i.e., trifluoroacetate) as disclosed in *Susi* and *Sherr*. Arguments relating to such a showing are below.

Claim Status

Claims 1-6 and 10-31 are pending. Claims 1-3, 5, 6, 10-17, 18-20 and 22-31 are rejected under 35 U.S.C. §103(a) as obvious in view of *Susi* (US 3,670,025), *Onishi* (US 6,214,435) and *Busman* (US 5,541,235). Claims 4 and 21 are rejected under 35 U.S.C. §103(a) as obvious in view of *Susi*, *Onishi*, *Busman* and *Koshar* (US 4,429,093). Applicants respectfully traverse these rejections.

Background

The claimed invention relates to (i) a novel near-infrared light absorbing dye obtained from a diimonium salt compound which absorbs light in the near-infrared spectrum and displays excellent resistance to heat and moisture and to (ii) a near-infrared light blocking filter containing the near-infrared light absorbing dye.

Recently, with the rise in demand for large and slim displays, plasma display panels (hereinafter abbreviated as "PDP") are becoming widely popular. Since near-infrared light emitted from a PDP causes electronic equipment that use near-infrared remote controls to

malfunction, a filter using a near-infrared light absorbing dye to block infrared rays is desired. In these electronic-type applications, a near-infrared light blocking filter is desired to effectively absorb light in the near-infrared spectrum, while allowing the transmission of visible light, and still possessing high resistance to heat and moisture.

Previous near-infrared light blocking filters comprising diimmonium salt compounds have been proposed. Of such compounds, N,N,N',N'-tetrakis{p-di(n-butyl)aminophenyl}-p-phenylene diimmonium salt which comprises bis(hexafluoroantimonate) as the anion moiety has been commonly used due to the relatively excellent resistance to heat and moisture. However, resistance to heat and moisture of this particular near-infrared light absorbing dye is still not entirely adequate. For example, the dye is typically decomposed during use thereby decreasing absorbance of near-infrared light, and an aminium salt generated from decomposition of the dye causes visible light to be absorbed thereby decreasing transmissivity of visible light and resulting in yellow coloration which degrades color tone. Furthermore, since this dye comprises a heavy metal as an anion moiety, use of a large quantity of this dye results in environmental pollution.

As a solution to the above-mentioned problems, the claimed invention provides a near-infrared light absorbing dye (obtained from a diimonium salt comprising a specific anion moiety) with excellent resistance to heat and moisture, wherein near-infrared light absorbance does not decrease when used for a long period of time. Additionally, the claimed invention also provides a near-infrared light blocking filter possessing excellent resistance to heat and moisture.

Applicants' Claims Non-Obvious in View of Cited Art

The Office asserts that *Susi* discloses aminium salt based dyes with organic as well as inorganic counter-ions including trifluoroacetate (Office Action, page 2), and that *Busman*

discloses fluorinated alkyl sulfonyl imide counter-ions to cationic dyes (Office Action, page 3, 1st para.). Accordingly, the Office concludes that it would have been obvious to "modify the filter layer of *Susi* comprising a diimonium salt by using any one of the highly fluorinated alkyl sulfonyl imide counterions taught by *Busman*" (Office Action, page 3, 4th para.).

In rebuttal to the Office's position and in light of the above-discussed interview with the Examiners, Applicants have submitted herewith a Declaration from Mr. Yamanobe of Japan Carlit Co., Ltd. providing an additional comparative example in juxtaposition to the previously presented Examples 1-7 (Tables 1, 2, 4 and 5). The additional comparative example 1 includes CF_3COO^- as the diimonium salt counter anion as disclosed by *Susi* and *Sherr*, whereas Examples 1-7 comprise a sulfone imide as the counter anion within the limitations of Applicants'. The comparison reproduced below shows that the residual ratio of the comparative dye being decreased greatly at the lapse of 24 hours and the heat resistance (Table 2) and moisture resistance (Table 3) thereof being remarkably poor when compared with the diimonium salts of the claimed invention.

Table 2: Result of durability test at 80°C ("Heat Resistance")

	Period of time	Additional comparative example 1	Example						
			1	2	3	4	5	6	7
Dye residual ratio (%)	Initial	100	100	100	100	100	100	100	100
	24 h	17.8							
	120 h		96.5	95.8	98.7	99.2	98.7	99.1	98.8
	240 h		94.4	93.1	97.2	98.0	97.4	98.2	97.7
480 nm Transmissivity Rate (%)	Initial	59.0	77.6	78.1	77.2	77.9	77.2	77.9	77.3
	24 h	75.3							
	120 h		77.2	77.5	76.8	77.4	76.9	77.5	76.8
	240 h		77.3	76.1	75.8	76.6	76.0	76.7	75.7

(Note) When the dye residual ratio decreases to less than 60%, the transmissivity rate increases conversely.

Table 3: Result of durability test at 60°C, 95%RH ("Moisture Resistance")

	Period of time	Additional comparative example 1	Example						
			1	2	3	4	5	6	7
Dye residual ratio (%)	Initial	100	100	100	100	100	100	100	100
	24 h	26.5							
	120 h		95.9	94.8	98.6	99.0	98.5	98.7	98.4
	240 h		94.4	92.9	96.6	97.4	96.5	97.5	96.5
480 nm Transmissivity Rate (%)	Initial	59.2	76.7	76.1	77.1	77.9	77.2	77.9	77.3
	24 h	66.1							
	120 h		75.0	74.0	76.1	77.4	76.5	77.4	76.3
	240 h		74.5	72.9	74.0	76.2	74.8	76.5	74.1

(Note) When the dye residual ratio decreases to less than 60%, the transmissivity rate increases conversely.

As can be seen above, the dye residual ratio of the claimed dyes (Examples 1-7) decreases at most by approximately 7% after 240 hours; whereas the dye comprising the anion as disclosed by *Susi* and *Sherr* decreases by 82.2% (heat resistance test) and 73.5% (moisture resistance test) after only 24 hours. Clearly, such a 10-fold reduction of the dye residual ratio loss (i.e., from 70-80% to only 7%) is not suggested by any of the cited references. Accordingly, it would not have been obvious to one skilled in the art that the inclusion of counter-anions like those disclosed by *Busman* in the aminium salt based dyes of *Susi* or *Sherr* would result in a dye with such superior heat and moisture resistance. Thus, any combination of the cited references does not render Applicants' claims obvious.

Conclusion

Applicants submit that all now-pending claims are in condition for allowance. Applicants respectfully request the withdrawal of the rejections and passage of this case to issue.

Respectfully submitted,

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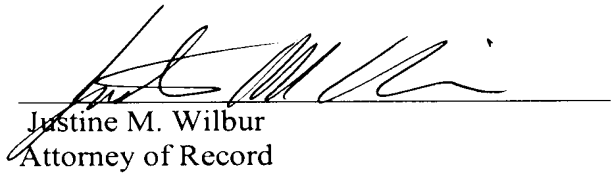

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